# BALLARD DIVING & SALVAGE

1135 NW 46th St Seattle, WA 98107
**Voice:** 206-782-6750 **Fax:** 206-782-6750 **Email:** divers@ballarddiving.com


October 12, 2010

## Proposal

## United State Coast Guard – Pipeline Inspection and Location Services

www.ballarddiving.com

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## Executive Summary

On October 12, 2010 Ballard Diving and Salvage received a call from Petty Officer Kevin Mallick related to a Concrete Cylinder Pipeline adjacent to Port Washington Marina. It is understood by Ballard Diving and Salvage that there is a section of the 8" ID pipe exposed at low tide. In this location is has been noted that creosote is escaping the pipeline. This proposal addresses the USCG's desire to locate the pipe, survey the interior of the pipe to document condition and any internal haz-waste buildup, and possibly abandon the system. BDS recommends a three phase approach to this issue:

1. **Internal Inspection**
2. **Location – Alignment**
3. **Abandonment**

## Internal Inspection

Ballard Diving recommends the use of our OWNED long range crawler system. The Crawler would carry a tilt/rotate zoom color camera and lights to image the inside surface of the pipe. The survey would include visually inspecting the liner of the pipe for structural defects. The typical defects that could be detected are circumferential cracks, longitudinal cracks, offset joints, spalls and erosion of the concrete liner. These areas can be identified by penetration range and potentially changes in grade. A report would be produced in conjunction with the video with the findings of the inspection. The video and features recorded for the report would be noted with umbilical payout (distance) from each access point.

The point of this survey would to be to determine whether this pipeline is blocked, occluded, crushed or still structurally sound. If passable the crawler could travel up to 700 each way (offshore/onshore)

**Deployment:** From beach at low tide or vessel at high tide

**Limitations:** If the crawler encounters an offset joint (more than two inches, rock or other obstruction it may be impossible to pass. It the crawler encounters buildup of creosote or slick residue it may not have the traction to continue, however, this heavy weight crawler has the best chance of any other equipment to make the range. BDS just completed nine miles of internal pipeline inspection for the City of Salem performing consistent 6000 feet runs.

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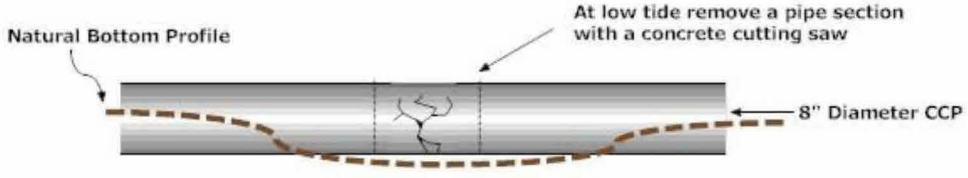
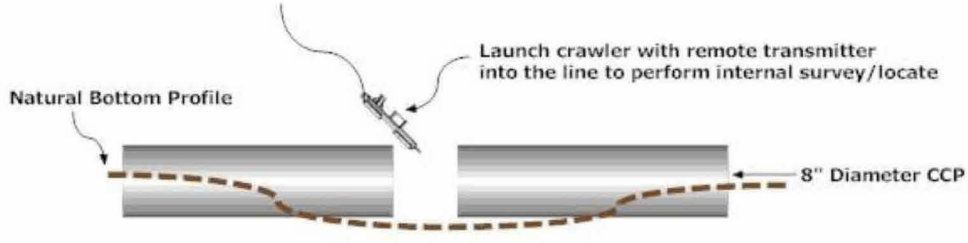
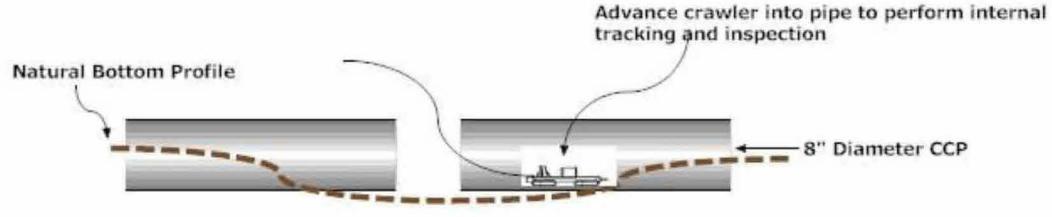
**Method**

The inspection would be primarily a video inspection as the ROV drives forward inside the pipe. The camera would be pointed forward for a complete pipe view as the ROV is moving and stopped at any anomaly or feature that required more detailed inspection. The 10x zoom function of the camera would allow the ROV to zoom in to very small features. Frequent stops will increase the time required for the penetration time but not the return time.

BDS's crawler was designed for penetrations in pipelines under its own power. This is for a number of reasons including simplicity of deployment, safety to the structure and safety to the equipment. The Crawler has 200 lbs of thrust with good traction to pull its own weight and the drag of the umbilical into a pipeline. The system is designed to pull the umbilical around a number of bends. The crawler would in general inspect two directions from each access point to minimize the number of access points.



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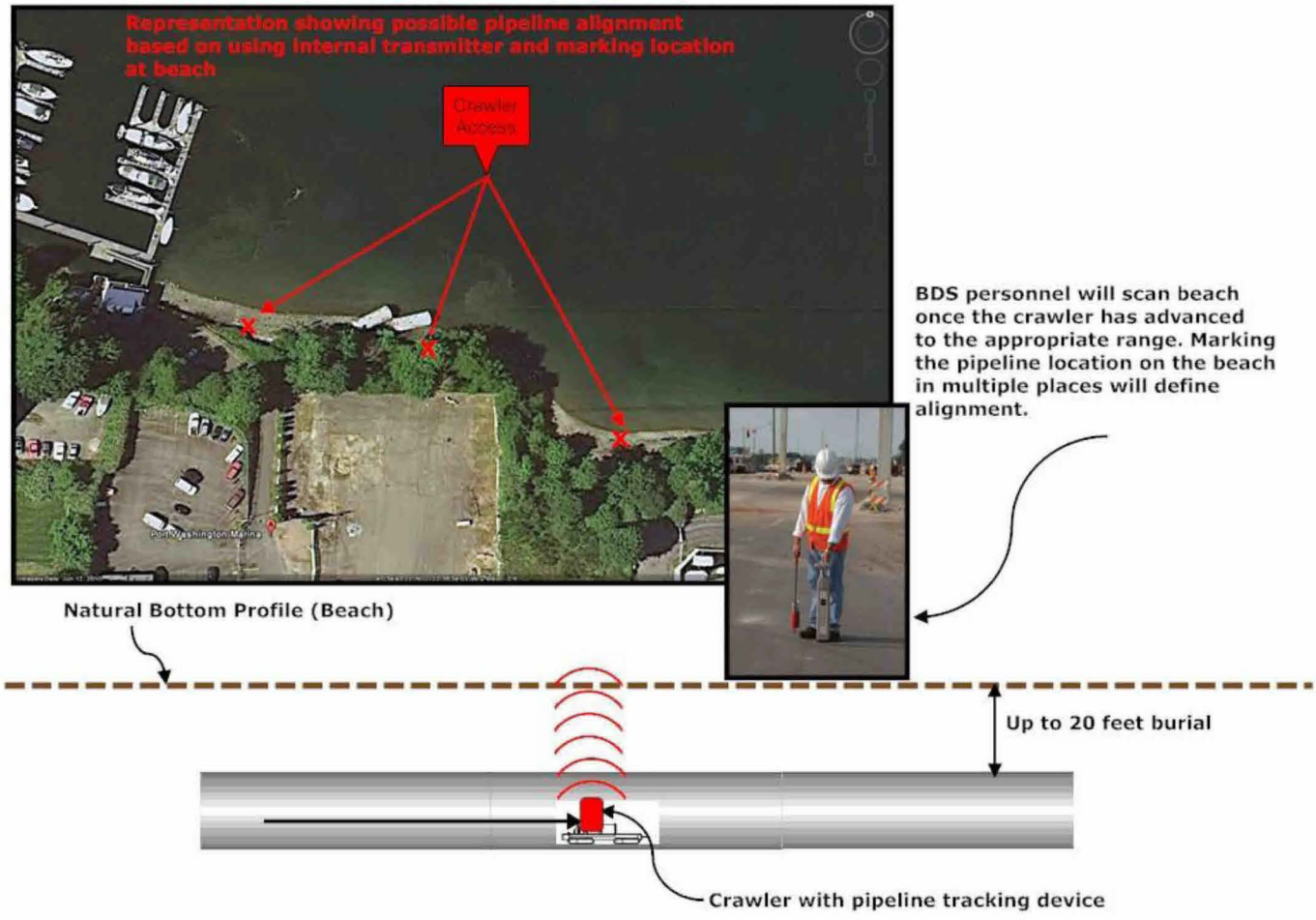
## Location

The crawler would be outfitted with a pipeline locator transponder. The BDS crew, using a HD range finder, would identify the distance from the access point to the beach. Once the crawler is positioned at the beach a surveyor will run track lines longitudinally to identify the position of the crawler in the line. Additional location marks will be acquired as possible.



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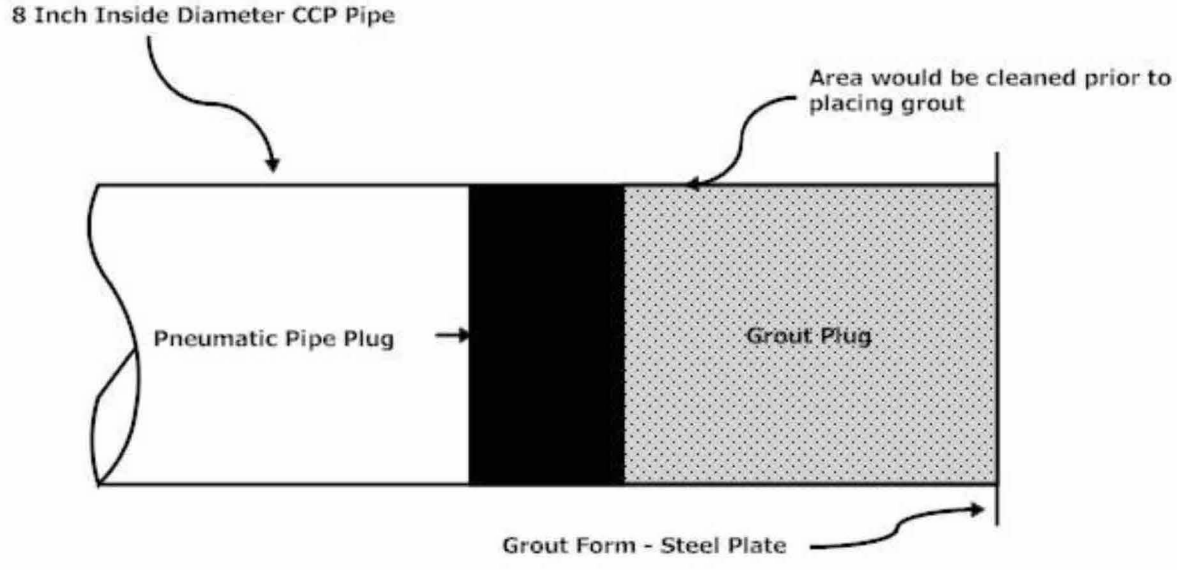
## Abandonment

If the USCG decides that it is in the best interest of the government to abandon the line a hydraulic cement grout mixture can be used to plug the open ends of the line.




## Equipment Configuration

BDS would provide a Crawler ROV system with the following features:

**Crawler System**
Cable Length 750'
Minimum Diameter 6"
Maximum Speed 30 feet per minute
Weight of Crawler 125lbs
Depth Rating 100'
Forward Lighting 4 x 50W

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**Color Camera System**
Main Color Camera Tilt Rotate and Zoom 460 Lines of Resolution

Main Camera Lighting 8 x 6W dimmable
Sensitivity 3 Lux
2 x secondary cameras with integrated lighting

**Options**
Profiling Sonar with Minimum Range 6" (flooded pipelines only)
GIS or pipe database software for reporting to inclusion in existing database
GPR Antenna to image the crown of the pipe (drained pipelines only)

**Crew**
Senior ROV Pilot - Association of Diving Contractors International (ADCI) ROV Supervisor Certificated
Tender

**Performance**

BDS's ROV's are specifically configured for each application to provide the greatest degree of maneuvering and sensor performance. Transducers, cameras, lighting, navigation sub-systems, propulsion, sensors, umbilicals and hulls are all configured to meet the customer's requirements based on the customer supplied specifications and drawings. BDS is not responsible for the performance of the ROV system(s) in the event that the structure that is being inspected is not as represented in the specifications and drawings and/or has hazards, obstructions, marine growth, appliances and features that cannot be safely passed by the ROV.

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**Pricing (Estimated – Actual billing based on BOA rates)**

| Item | Description | Cost |
|---|---|---|
| Item 1 | Mob/Demob | $2100.00 |
| Item 2 | Cut Pipe ( 4 hours) | $1500.00 |
| Item 3 | Crawler Survey (6 hours) | $3500.00 |
| Item 4 | Pipe Locate (2 hours) | $750.00 |
| Item 5 | Abandonment (4 hours) | $1500.00 |

**Project Specific Notes/Exclusions:**

- Rates above are for straight time hours only
- Estimate based on known details
- Subsistence and Lodging will be charged if the operation requires an overnight stay

Signed,

Jesse Hutton, Estimator